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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,872	02/07/2005	Ralph Stoemmer	14219-078US1/P2002,0698 U	4400
26161	7590	08/07/2007	EXAMINER	
FISH & RICHARDSON PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			JONES, STEPHEN E	
			ART UNIT	PAPER NUMBER
			2817	
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			08/07/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/523,872	<b>Applicant(s)</b> STOEMMER ET AL.	
	<b>Examiner</b> Stephen E. Jones	<b>Art Unit</b> 2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 May 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2,4-10 and 12-32 is/are pending in the application.
- 4a) Of the above claim(s) 8 and 9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2,4-7,10 and 12-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 2,4-10 and 12-32 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 May 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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**DETAILED ACTION**

***Election/Restrictions***

1. Claims 8-9 remain withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 11/15/06.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
4. Claims 21, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Panasik (US 6,441,703) in view of Goetz et al. (both of record).

Panasik teaches a filter including: a substrate (i.e. a wafer (e.g. 256 in Fig. 6); layered resonator structures (e.g. 250) having two electrodes and a piezoelectric layer between them (e.g. see Col. 1, lines 60-67); a reflector/mirror array (254) which includes metal and dielectric high acoustic impedance and low acoustic impedance material layers (e.g. see Col. 5, SiO<sub>2</sub> and Tungsten) which are quarter wavelength (e.g. see Col. 2), and can have additional layered pairs (e.g. see Col. 7, lines 23-32); the reflector provides a hermetic cover (e.g. see Col. 7, lines 10-22); the dielectric is planar and is over the entire device/chip which has additional filters (e.g. see Figs. 1 and 5-6, col. 3, and lines 45-67); and the resonators are electrically interconnected by the layer structure (e.g. see Fig. 2 and Col. 4).

However, Panasik does not explicitly teach that the dielectric layer is above the layered resonator structure with the metal layer above the dielectric layer or that the dielectric of the mirror/reflector comprises the hermetic encapsulation.

Goetz provides the general teaching that SiO<sub>2</sub> may provide a hermetic seal for an acoustic wave device (e.g. see Col. 4, lines 46-53).

Also, it is well-known to use the top electrode of a resonator to also function as a high impedance layer of the mirror.

It would have been considered obvious to one of ordinary skill in the art to have used the top electrode layer of the resonator to have also functioned as a high impedance layer of the acoustic mirror, because it would have provided the well-known advantageous benefit of reducing the number of layers needed to form the resonator in

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combination with the reflector. As an obvious consequence, the device results in the dielectric layer being under the top metal layer.

Furthermore, it would have been considered obvious to one of ordinary skill in the art to have the SiO<sub>2</sub> reflector/mirror layer comprise the hermetic seal such as suggested by Goetz, especially since Panasik suggests that the reflector/mirror provides hermetic sealing and includes SiO<sub>2</sub> which is a known adequate hermetic sealing material for acoustic devices as taught by Goetz.

5. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Panasik (US 6,441,703) and Goetz et al. as applied to claims 21 above, and further in view of Panasik (US 6,087,198) (all of record).

The combination of Panasik and Goetz teaches a filter as described above, but does not explicitly teach that the wafer surface has solderable contacts connected to the resonators via feedthroughs.

Panasik (US 6,087,198) teaches that well-known vias can be used to make connections for acoustic filters (e.g. see Col. 6, lines 12-20).

It would have been considered obvious to one of ordinary skill in the art to have connected the Panasik/Goetz device with vias and solderable contacts such as taught by Panasik (US 6,087,198), especially since Panasik (6,441,703) is silent as to the particulars of the connections thus any well-known connection means such as solderable contacts and vias through the substrate would have provided a well-known means for connecting the filter device to other circuits to thus make the filter useful.

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6. Claims 2, 4, 5, 6, 10, 12, 13, 16-19, 22, 27, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Panasik (US 6,441,703) in view of Goetz et al and Klee (US 6,768,396) all of record.

The combination of Panasik and Goetz teaches a filter as described above, but does not explicitly teach that the dielectric layer comprises a low-k, organic material such as benzocyclobutene or an aerogel.

Klee teaches that benzocyclobutenes and aerogels can be used as a dielectric for acoustic reflectors (e.g. see Col. 2, lines 64-67 and Col., 3, lines 1-20).

It would have been considered obvious to one of ordinary skill in the art to have substituted benzocyclobutenes or aerogels such as taught by Klee in place of the SiO<sub>2</sub> dielectric in the combination of Panasik and Goetz, because it would have been a mere substitution of well-known art-recognized functionally equivalent dielectric layer means for forming an acoustic reflector/mirror.

7. Claims 7, 14, 20, 23, 24, 29, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Panasik (US 6,441,703), Goetz et al. and Klee (US 6,768,396) all of record as applied to claim 4 above, and further in view of Ella of record.

The combination of Panasik, Goetz, and Klee teaches a filter as described above, but does not explicitly teach that the wafer surface has solderable contacts connected to the resonators.

Ella (e.g. Fig. 10a-10b) teaches solderable contacts for connecting to the resonators of the filter.

It would have been considered obvious to one of ordinary skill in the art to have connected the Panasik/Goetz/Klee device with solderable contacts such as taught by Ella, especially since Panasik is silent as to the particulars of the connections thus any known connection means such as solderable contacts of Ella would have provided a well-known means for connecting the filter device to other circuits to thus make the filter useful.

8. Claims 15 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Panasik (US 6,441,703), Goetz et al. and Klee (US 6,768,396) all of record as applied to claims 4 and 22 above, and further in view of Ella of record.

The combination of Panasik, Goetz, and Klee teaches a filter as described above, but does not explicitly teach that the wafer surface has solderable contacts connected to the resonators via feedthroughs.

Panasik (US 6,087,198) teaches that well-known vias can be used to make connections for acoustic filters (e.g. see Col. 6, lines 12-20).

It would have been considered obvious to one of ordinary skill in the art to have connected the Panasik/Goetz/Klee device with vias and solderable contacts such as taught by Panasik (US 6,087,198), especially since Panasik (6,441,703) is silent as to the particulars of the connections thus any well-known connection means such as solderable contacts and vias through the substrate would have provided a well-known means for connecting the filter device to other circuits to thus make the filter useful.

***Response to Arguments***

9. Applicant's arguments filed 5/7/07 have been fully considered but they are not persuasive.

Applicant argues that Panasik '703 does not teach a dielectric layer having claimed properties that provides hermetic encapsulation and refers to Col. 5.

This argument is not persuasive because Panasik clearly teaches in Col. 7 (lines 10-22) that the reflector cover provides protection from humidity and other contaminants (i.e. it is a hermetic cap above the plurality of resonators under it).

Applicant also argues that Goetz does not teach that its SiO<sub>2</sub> layer is reflector layers but is passivation layers in a different configuration from Panasik.

This argument is not persuasive, especially since the rejection is merely relying on the general teaching of SiO<sub>2</sub> as a hermetic sealing material composition, not substitution of parts as it appears applicant is arguing. Since the Panasik material also is SiO<sub>2</sub>, obviously in view of Goetz general teaching of the hermetic properties of SiO<sub>2</sub> that the SiO<sub>2</sub> of Panasik would specifically provide the hermetic encapsulation which is provided and taught by Panasik.

Regarding Claim 21, Applicant argues that Fig. 2 of Goetz shows interconnections of the resonators, but does not specify that the electrode layers are used for the interconnections and refers to the present specification pages 20-21 as other ways to make connections other than electrode layers.

However, this argument is not persuasive especially since in each type of connection described in the present specification the electrode layers are indeed



tapped/connected (e.g. a dielectric can be removed to make connection points), and also Fig. 2 clearly shows the electrodes interconnected schematically.

Regarding Claim 25, Applicant once again argues specifics about the structure of Goetz which is also not commensurate with the rejections for the same reasons as previously argued above.

Finally, Regarding claim 23, Applicant argues that Ella, Panasik, and Goetz do not teach active/passive components integrated with the plurality of resonators.

This argument is not convincing since the active/passive components are not positively recited and are merely an alternative to "electrically connected to the plurality of resonators" which the references teach (i.e. see "or" statement of Claim 14).

### ***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

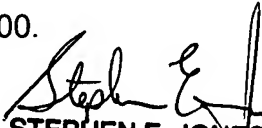
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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen E. Jones whose telephone number is 571-272-1762. The examiner can normally be reached on Monday through Friday from 9 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert J. Pascal can be reached on 571-272-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
STEPHEN E. JONES  
PRIMARY EXAMINER

SEJ